GCSE MARKING SCHEME

AUTUMN 2021

GCSE
MATHEMATICS – NUMERACY
UNIT 2 – FOUNDATION TIER
3310U20-1

INTRODUCTION

This marking scheme was used by WJEC for the 2021 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

Unit 2: Foundation Tier	Mark	Comments
1.(a) Three million, three hundred (and) fifty one thousand	B1	
1.(b) 32 (years old)	B1	Answer space takes precedence
1.(c) 83 (hours) 19 (minutes) (0)4 (seconds)	B2	B1 for 83 (hours) AND 19 (minutes) OR B1 for 83 (hours) AND (0)4 (seconds) OR B1 for 83 (hours) 18 (minutes) 64 (seconds) seen B1 for 83 (hours) 15 (minutes) 22 (seconds) (from subtracting)
1.(d) likely	B1	
1.(e) Two lines drawn within the tolerance	B2	B1 for one correct angle drawn within tolerance OR for sight of 360(°) ÷ 3 or 120(°) Use OVERLAY for top two angles If B2 not awarded, check using ANGLE MEASURER for bottom angle, for a possible B1 or B2
2.(a) *Ystwyth* 600 (points) AND *Taf* 300 (points)	B3	B2 for *Ystwyth* 600 or *Taf* 300 OR B2 for *Ystwyth* 300 AND *Taf* 600 B2 for 2 numbers that add to 900 B1 for sight of 1970 – 1070 or 900
2.(b) Any two suitable reasons e.g. "Conway should be 10" "Conwy bar height not correct" "Taf has 1 bar, others have 2" "Different width bars" "scale not correct" "No gap between bars" "vertical label missing" "no title"	E2	E1 for each reason Allow "(The scale) should go up in 10s…..or 5s" "The numbers jump from 10 to 30" "The bars are too close together" "The numbers aren't going up in the right order" Do not accept "They are not spaced out "They are not in order"

3.(a)(i)			
330×250 $82\,500$ mm^2		M1 A1 U1	Award M1 for 33×25 OR $0{\cdot}33 \times 0{\cdot}25$ Mark final answer If change of units (cm or m), then method must match answer (825 or 0·0825) e.g. $330 \times 250 = 825$ is awarded M1A0U0 but, if correct units included e.g. $330 \times 250 = 825\ cm^2$ M1A1U1 can be awarded. FT correct unit for their calculation. Unsupported incorrect answers are awarded U1 for mm^2 only
3.(a)(ii) (a =) 36(·0 cm) (cm) AND (b =) 26·9		B3	B2 for • a = 360 (mm) AND b = 269 (mm) • a = 26·9 (cm) AND b = 36(·0 cm) • a = 36(·0 cm) • b = 26·9 (cm) • 330 + 15 + 15 AND 250 + 15 + 4 • 33 + 1·5 + 1·5 AND 25 + 1·5 + 0·4 Otherwise B1 for sight of • 269 OR 26·9 • 360 OR 36(·0) • 330 + 15 + 15 OR 250 + 15 + 4 • 33 + 1·5 + 1·5 OR 25 + 1·5 + 0·4 If no marks awarded, SC1 for sight of 34·5 or 25·4 or 26·5 (one length omitted)
3.(b) 23 × 15·5 + 237.6(0) (£) 594.1(0)		M2 A1	Allow M1 for substitution of their attempt at 15 hours 30 minutes e.g. 23 × 15·3 + 237.6(0) 23 × 930 + 237.6(0) Allow FT from 15·3 but not 930 i.e. award M1A1 for 23 × 15·3 + 237.6(0) = (£)589.5(0) If no marks award SC1 for • an answer of (£)356.5(0) (from 23 × 15·5) • an answer of (£)582.6(0) (from 23 × 15 + 237.6(0))

4.(a)(i) (Plan A discounted joining fee =) (£)135 × 0.85 or (£)135 – 0.15 × (£)135	M2	Or equivalent ((£)135 – (£)20.25) M2 for complete method Award M2 for sight of (£)114.75 Award M1 for sight of 0.15 × (£)135 or (£)20.25 May be seen/implied in further working
(Plan A =) 12 × (£)31.99 + (£)114.75	M1	(£)383.88 + (£)114.75 (= (£)498.63) FT 'their (£)114.75' Allow 12 × (£)31.99 + (£)135 (=(£)518.88) or 12 × (£)31.99 + (£)20.25 (=(£)404.13) for M1

(£)498.63 AND (Cheaper offer =) B	A2	Accept (£)499(.00)
		Award A1 for (£)498.63 or (£)499(.00)
		Award A1 for total cost incorrectly calculated or rounded incorrectly with correct conclusion
		FT their calculations for A2 or A1, provided at least M1 awarded
		e.g.
		(£)518.88 if (£)135 used (M1A1) and B selected (M1A2) or
		(£)404.13 if (£)20.25 used (M1M1A1) and A selected (M1M1A2).
		Must be unambiguous indication.
		
		Note:
		If (£)518.88 × 0.85 = (£)441.04(8) or equivalent is calculated (15% discount off total), then award M1M1A1 or A2 if correct conclusion A selected.
		
		If (£)518.88 × 0.15 = (£)77.83(2) or equivalent is calculated (15% discount of total), then award M0M1A1 or A2 if correct conclusion A selected.
		
		If (£)518.88 calculated for Plan A and (£)408 calculated for Plan B (15% off Plan B) then award M1M1A1 or A2 if correct conclusion B selected.

Organisation and communication	OC1	For OC1, candidates will be expected to: • present their response in a structured way • explain to the reader what they are doing at each step of their response • lay out their explanations and working in a way that is clear and logical • write a conclusion that draws together their results and explains what their answer means
Writing	W1	For W1, candidates will be expected to: • show all their working • make few, if any, errors in spelling, punctuation and grammar • use correct mathematical form in their working • use appropriate terminology, units, etc.

4.(a)(ii) Suitable **disadvantage** given relevant to the question
e.g. "she may not have £480 to pay in one go"
   "a lot to pay in one go"
   "easier to pay in instalments"
   "only a bit cheaper so might as well go for the monthly instalments"
   "a lot of money if you give up/don't like it"
   "the monthly payment could go up"
	E1	FT provided a suitable explanation
		
		Allow
		"the (monthly) price can go up"

4.(b) <table><tr><td></td><td>DAY</td><td>TIME</td><td>ACTIVITY</td></tr><tr><td>1</td><td>Monday</td><td>6 p.m.</td><td>AQUA AEROBICS</td></tr><tr><td>2</td><td>Tuesday</td><td>8 p.m.</td><td>RUNNING CLUB</td></tr><tr><td>3</td><td>Wednesday</td><td>6 a.m.</td><td>SPIN</td></tr><tr><td>4</td><td>Friday</td><td>8 p.m.</td><td>STEP</td></tr></table>	B3	Table takes precedence. B2 for 2 or 3 correct rows or for the 4 classes unambiguously indicated on the timetable. B1 for 1 correct row or for 3 classes unambiguously indicated on the timetable. Could be any order. Penalise -1 once only if up to one entry missing on every row.
5.(a) Number of units 620	B1	
Charge for units 620 × (0.)18	M1	FT 'their 620', including if not a whole number Award for sight of digits 1116(0)
(£) 111.6(0)	A1	Must be in pounds
(Standing charge) (£ 18) Total charges (£) 129.6(0)	B1	FT 'their 111.6(0)' + 18 correctly evaluated
VAT at 5% (£) 6.48	B1	FT 5% of 'their 129.6(0)' correctly evaluated, allow rounded or truncated Allow for sight of (£) 136.08 in this box as implying (£) 6.48
Amount to pay (£) 136.08	B1	FT provided at least one of the two previous B1 marks has been awarded

5.(b)		**If an evaluation is given with incorrect units, penalise A mark -1 on the first occasion then FT**

5.(b)   Water interest 0.02 × 234
   AND   Gas interest 0.023 × 120
   AND   Loan interest 0.11 × 45
	M2	Or equivalents
		 M1 for any 1 or 2 correct methods

Water (£) 4.68 Gas (£) 2.76 Loan (£) 4.95	A2	A1 for any 1 or 2 correct evaluations
Total interest (£) 12.39	A1	Mark final answer, unless clearly stated as total interest FT for the sum of 3 amounts provided 2 of the amounts are correct
5.(b) Alternative method: *Water payment 1.02 × 234* *AND Gas payment 1.023 × 120* *AND Loan payment 1.11 × 45*	*M2*	*Or equivalents* *M1 for any 1 or 2 correct methods*
Water (£) 238.68 *Gas (£) 122.76* *Loan (£) 49.95*	*A2*	*A1 for any 1 or 2 correct evaluations*

Total interest (£238.68 + £122.76 + £49.95
         - £234   - 120   - 45 =)
                     (£) 12.39
	A1	*(= £411.39 – £399)*
		 FT for the sum of 3 amounts – (234 + 120 + 45)
		 provided 2 of these 3 amounts are correct

6. (Mass of sugar =) 1920 × 3 ÷ 16 or $\frac{3}{16}$ × 1920	M1	Or 0.1875 × 1920
360 (g)	A1	
(Number of eggs = 360 ÷ 90 =) 4	B1	Do not accept from incorrect working FT 'their derived 360' ÷ 90, rounded or truncated to a whole number of eggs
(Mass of sultanas = 360 ÷ 90 × 50 =) 200 (g)	B1	FT 'their derived 360' ÷ 90 or FT 'their 4' × 50 provided 'their 4' ≠ 1

7.(a) Perimeter (circumference of the circular table)
           π × 1.5 or 2 × π × 0.75
                        4.7(...m)
	M1
	 A1	

Rectangular table perimeter 5.6 (m) **AND** the usion that rectangular perimeter is greater	E1	5.6 (m) must be seen or implied by the difference between 5.6 (m) and 'their circumference' FT depends on M1 previously awarded

7.(b) Circular table area $\pi \times (1.5 \div 2)^2$	M1	
1.76(... m²) or 1.77 (m²) or 1.8 (m²)	A1	Allow an answer truncated to 1.7(m²)

Rectangular table area 1.6 (m²) **AND** the conclusion 'no' (the circular table area is greater)	E1	1.6 (m²) must be seen or implied by the difference between 1.6 (m²) and 'their area of circle'
		STRICT FT from 'their conclusion in (a)' for the conclusion in (b), provided M1 previously awarded in (b)
		
		<table><tr><td>Answers in (a)</td><td>Answers in (b)</td><td>Conclusion</td></tr><tr><td>rectangle > circle</td><td>rectangle < circle</td><td>no</td></tr><tr><td>rectangle < circle</td><td>rectangle < circle</td><td>yes</td></tr><tr><td>rectangle > circle</td><td>rectangle > circle</td><td>yes</td></tr><tr><td>rectangle < circle</td><td>rectangle > circle</td><td>no</td></tr></table>
		If they match it is 'yes', if they don't it is 'no'
		'Their conclusion' from (a) may be inferred
		If 'yes' or 'no' is not stated then it must be unambiguously implied
		
		If no marks, award SC1 for meeting all three of the following requirements:
		1. $\pi \times 1.5^2 = 7(.0...\text{m}^2)$ or $7.1(\text{m}^2)$
		       OR $\frac{1}{2} \times \pi \times 1.5^2 = 3.5(...\text{m}^2)$
		2. Rectangular area 1.6 (m²)
		       OR implied by the difference between 1.6 (m²) and 'their area of circle'
		3. Appropriate conclusion of 'yes' or 'no'

8.(a) 1.04 m²	B1	
8.(b) Positive	B1	
8.(c) Garth's height 1.65 (m)	B2	Accept 165 cm written in the answer space, but must state cm, allow 165 cm without the 'm' crossed out Allow B1 for 165 written in the answer space B1 Correct working, Ella's height 1.6(0 m) or 160 (cm) or Garth's area of skin 1.7 (m²) . Allow this: • if any of the above values are given in the answer space provided the correct units are written, allowing without 'm' crossed out, or • for either point (1.6, 1.54) unambiguously labelled Ella or the point (1.65, 1.7) unambiguously labelled Garth on the graph

9.   1000 × 250 ÷ 28350
     or   250000 ÷ 28350
     or   250 ÷ 28.35(0)
		M2	M1 for sight of appropriate digits with division with incorrect place value of mass(es)
			Do not allow for division inverted

8.8(18...) (applications)		A1	Do not FT from M1 Accept answers of 8 or 9 (applications) from correct working Ignore the unit of the answer given as 'ounces'

9.   _Alternative method_
          _28(.)350 × 9 = 255(.)150_
       _or 28(.)350 × 8.8 = 249(.)480_
		_M2_	_Or for use of a value between 8.8 and 9_
			M1 for 28(.)350 × 8 = 226(.)800
			and _possible_
			M1 for 250(.)000 – 226(.)800 = 23200 (mg)
			                   (which is < 28350 mg)
			_OR_
			M1 multiple of 28(.)350 × 9 = 255(.)150
			or 28(.)350 × 8.8 = 249(.)480 with incorrect place value of mass(es)

8.8(18...) (applications)		_A1_	_Do not FT from M1_ _Accept answers of 8 or 9 (applications) from correct working_ _Ignore the unit of the answer given as 'ounces'_ _Note: Sight of 28(.)350 × 8 = 226(.)800_ **_only_** _with an answer of 8 (applications) is awarded M1 A1_

3310U20-1 WJEC GCSE Numeracy – Unit 2 FT MS A21/CB